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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

Application Number	10/930,899
Filing Date	August 13, 2001
First Named Inventor	Paek, et al.
Art Unit	2171
Examiner Name	Etienne Pierre Leroux
Attorney Docket Number	070050.1520

ENCLOSURES *(Check all that apply)*

- [x] Fee Transmittal Form
  - [x] Fee Attached
- [ ] Amendment/Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Reply to Missing Parts/ Incomplete Application
  - [ ] Reply to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s) _____
  - [ ] Landscape Table on CD
- [ ] After Allowance Communication to TC
- [ ] Appeal Communication to Board of Appeals and Interferences
- [x] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
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Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Baker Botts LLP	Customer No.	21003
Signature			
Printed name	Robert L. Maier		
Date	12/13/2005	Reg. No.	54,291

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PTO/SB/17 (10-04)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

FEE TRANSMITTAL for FY 2005

Effective 10/01/2004. Patent fees are subject to annual revision.

☑ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 250

Complete if Known	
Application Number	109/830,899
Filing Date	August 13, 2001
First Named Inventor	Paek, et al.
Examiner Name	Etienne Pierre Leroux
Art Unit	2171
Attorney Docket No.	070050.1520

METHOD OF PAYMENT *(check all that apply)*

☑ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☑ Deposit Account:

Deposit Account Number: 02-4377

Deposit Account Name: Baker Botts L.L.P.

The Director is authorized to: *(check all that apply)*

☐ Charge fee(s) indicated below ☑ Credit any overpayments

☑ Charge any additional fee(s) or any underpayment of fee(s)

☐ Charge fee(s) indicated below, **except for the filing fee** to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Small Entity Fee Code	Fee Description	Fee Paid
1001	2001	Utility filing fee	
1002	2002	Design filing fee	
1003	2003	Plant filing fee	
1004	2004	Reissue filing fee	
1005	2005	Provisional filing fee	

SUBTOTAL (1) ($) 0

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

	Extra Claims		Fee from below	Fee Paid
Total Claims		-20 =		X = 0
Independent Claims		-3 =		X = 0
Multiple Dependent				= 0

Large Entity Fee Code	Small Entity Fee Code	Fee Description
1202	2202	Claims in excess of 20
1201	2201	Independent claims in excess of 3
1203	2203	Multiple dependent claim, if not paid
1204	2204	** Reissue independent claims over original patent
1205	2205	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 0

***or number previously paid, if greater; For Reissues, see above*

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Small Entity Fee Code	Fee Description	Fee Paid
1051	2051	Surcharge - late filing fee or oath	
1052	2052	Surcharge - late provisional filing fee or cover sheet	
1053	1053	Non-English specification	
1812	1812	For filing a request for *ex parte* reexamination	
1804	1804	Requesting publication of SIR prior to Examiner action	
1805	1805	Requesting publication of SIR after Examiner action	
1251	2251	Extension for reply within first month	
1252	2252	Extension for reply within second month	
1253	2253	Extension for reply within third month	
1254	2254	Extension for reply within fourth month	
1255	2255	Extension for reply within fifth month	
1401	2401	Notice of Appeal	
1402	2402	Filing a brief in support of an appeal	250
1403	2403	Request for oral hearing	
1451	1451	Petition to institute a public use proceeding	
1452	2452	Petition to revive - unavoidable	
1453	2453	Petition to revive - unintentional	
1501	2501	Utility issue fee (or reissue)	
1502	2502	Design issue fee	
1503	2503	Plant issue fee	
1460	1460	Petitions to the Commissioner	
1807	1807	Processing fee under 37 CFR 1.17(q)	
1806	1806	Submission of Information Disclosure Stmt	
8021	8021	Recording each patent assignment per property (times number of properties)	
1809	2809	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	2810	For each additional invention to be examined (37 CFR 1.129(b))	
1801	2801	Request for Continued Examination (RCE)	
1802	1802	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($) 250

SUBMITTED BY

(Complete *(if applicable)*)

Name (Print/Type)	Robert L. Maier	Registration No. (Attorney/Agent)	54,291	Telephone	212-408-2500
Signature				Date	12/13/2005

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

On Appeal to the Board of
Appeals and Interferences

Applicant :	Paek et al.		
Serial No. :	09/830,899	Group Art Unit:	2171
Filed :	August 13, 2001	Examiner:	Leroux, Etienne Pierre
Title:	DESCRIPTION SCHEMES FOR MPEG-7 IMAGE/VIDEO CONTENTS DESCRIPTION		

BRIEF ON APPEAL

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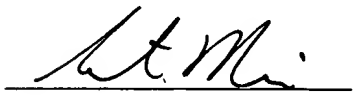
December 13, 2005
Date of Deposit

Robert L. Maier	54,291
Attorney Name	Registration No.
	December 13, 2005
Signature	Date of Signature

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

On Appeal to the Board of Appeals and Interferences

Applicant :	Paek et al.		
Serial No. :	09/830,899	Group Art Unit:	2171
Filed :	August 13, 2001	Examiner:	Leroux, Etienne Pierre
Title:	DESCRIPTION SCHEMES FOR MPEG-7 IMAGE/VIDEO CONTENTS DESCRIPTION		

BRIEF ON APPEAL

This brief is filed in response to a Final Office Action issued by the U.S. Patent and Trademark Office (the "PTO") in the above-referenced application on July 5, 2005.

On October 14, 2005, Appellants filed a Notice of Appeal in the above-identified patent application from the final rejection of claims 1-43. In accordance with 37 C.F.R. § 41.37, this Appeal Brief is submitted in support of the Appeal of the final rejection. The fee for this Appeal, as set forth in 37 C.F.R. §41.20(b)(2), is enclosed. For the reasons set forth below, the final rejection of pending claims 1-43 should be reversed.

I. REAL PARTY IN INTEREST

The real party in interest is The Trustees of Columbia University in the City of New York, by way of assignment from the named inventors, recorded on August 13, 2001 at Reel 012068, Frame 0221.

II. RELATED APPEALS AND INTERFERENCES

Appellants and the Appellants' legal representatives are unaware of any appeals or interferences related to the present application which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

In the July 5, 2005 Final Office Action, claims 1-43 were rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Application Publication No. 2001/0000962 of Rajan (hereinafter "Rajan"). Appellants respectfully traverse the rejections of record.

A copy of all of the pending claims is attached hereto in the Claims Appendix at page A-1.

IV. STATUS OF AMENDMENTS

Subsequent to the issuance of the Final Official Action dated July 5, 2005, no further amendments to the claims have been filed by Appellants.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The invention described in the above-identified application is directed to a method and system for generating a description record from multimedia information. (e.g., Specification, page 4, lines 24-27). Specifically, the present invention has useful applications in, e.g., cataloging, indexing and searching multimedia content, as is described in more detail below. (Specification, page 4, line 24 - p. 5, line 12).

As defined by independent claim 1, the claimed invention is directed to a system for generating a description record from multimedia information, comprising, *inter alia*,:

> a computer processor, coupled to said at least one multimedia information input interface, receiving said multimedia information therefrom, processing said multimedia information by performing object extraction processing to generate multimedia object descriptions from said multimedia information, and processing said generated multimedia object descriptions by object hierarchy processing to generate multimedia object hierarchy descriptions indicative of an organization of said object descriptions, wherein at least one description record including said multimedia object descriptions and said multimedia object hierarchy descriptions is generated for content embedded within said multimedia information; and

(Claim 1).

Importantly, the claimed invention includes the limitation of "performing *object extraction processing* to generate multimedia object descriptions from said multimedia information, and *processing said generated multimedia object descriptions by object hierarchy processing* to generate *multimedia object hierarchy descriptions* indicative of an organization of said object descriptions, wherein at least one description record including said multimedia object descriptions and said multimedia object hierarchy descriptions is generated for content embedded within said multimedia information." (Claim 1) (*See*, e.g., Specification pp. 11-14, 26-29; Figs. 2, 7,8). Similar limitations are provided in independent method claim 17, including, e.g.:

> processing said multimedia information by performing object extraction processing to generate multimedia object descriptions from said multimedia information;
>
> processing said generated multimedia object descriptions by object hierarchy processing to generate multimedia object hierarchy descriptions indicative of an organization of said object descriptions, wherein at least one description record including said multimedia object descriptions and said multimedia object hierarchy descriptions is generated

(Claim 17).

and in independent computer-readable medium claim 33, which includes, *inter alia*,:

> one or more multimedia object descriptions, generated by performing object extraction processing, said object descriptions describing corresponding multimedia objects;
>
> one or more features characterizing each of said multimedia object descriptions;
>
> one or more multimedia object hierarchy descriptions indicative of an organization of said object descriptions, if any, relating at least a portion of said one or more multimedia objects in accordance with one or more characteristics.

(Claim 33).

It is an object of the claimed invention to solve a problem in the art regarding the indexing, classification and searching of multimedia content. The contents of textual information can be easily searched using prior art systems such as internet search engines (e.g., Yahoo!, Google, etc.) and other text search systems. The claimed invention facilitates this same sort of content search functionality for collections of multimedia information, such as pictures and video. (The Background of the Invention describes attempts in the prior art to provide multimedia databases which permit users to search for pictures using characteristics such as color, texture, and shape information of objects embedded in a picture, but nothing to perform a general search of, e.g., the Internet or other computer networks for multimedia content (Specification, p. 2, lines 2-7)). The present invention relates to a description record which contains descriptive information regarding multimedia information (e.g., descriptions of what is shown in digital video or in a digital picture). These description records are useful for

categorizing, indexing, and searching collections of multimedia information based on the contents of that information.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-43 were rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Application Publication No. 2001/0000962 of Rajan (hereinafter "Rajan"). Appellants respectfully request review of all rejections of record.

VII. ARGUMENT

A. The Rejections Under 35 U.S.C. § 102(e) in view of Rajan Should Be Reversed

In the July 5, 2005 Final Office Action, claims 1-43 were rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Application Publication No. 2001/0000962 of Rajan (hereinafter "Rajan"). Appellants respectfully traverse the rejections of record.

1. Relevant Case Law

To establish an anticipation rejection, the cited reference must teach every element of the claimed invention. 35 U.S.C. § 102(e) states, in pertinent part, that "[a] person shall be entitled to a patent unless the invention was described in (1) an application for patent . . . by another filed in the United States before the invention by the applicant for patent." A patent claim is thus anticipated under Section 102 if, among other things, "identity of invention" is shown. *Minnesota Mining and Manufacturing Co. v. Johnson & Johnson Orthopedics, Inc.*, 976 F.2d 1559, 1565, 24 U.S.P.Q.2d 1321 (Fed. Cir. 1985). In finding identity of invention, one "must show that each element of the claim in issue is found . . . in a single prior art reference." *Id.* The Federal Circuit has held that, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art

reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051 (Fed. Cir. 1987). Moreover, "[a] prior art publication cannot be modified by the knowledge of those skilled in the art for purposes of anticipation." *In re Saunders*, F.2d 599, 602-03, 170 U.S.P.Q. 213, 444 (C.C.P.A. 1971).

2. Rajan's Priority Document Does Not Disclose the Text Cited By the Examiner

Rajan is a continuation of International Patent Application PCT/US99/14306, filed on June 24, 1999 (the "International Rajan Application"). The present application claims priority to Provisional Patent Application Serial No. 60/107,463, filed on November 6, 1998, which is earlier than the priority date of International Rajan Application. The International Rajan Application was based on Provisional Patent Application Serial No. 60/090,845, filed on June 26, 1998 (the "Rajan Provisional").

Accordingly, because the present application's priority date pre-dates the filing date of the International Rajan Application, but post-dates the Rajan Provisional, all portions of Rajan cited in the Final Office Action to reject the claims of the present invention must be supported in the Rajan Provisional. Several cited portions are not.

In the Final Office Action, the Examiner cites Figure 1 and ¶¶ 0040-0045 of Rajan as forming the basis all rejections of record. (Final Office Action, pp. 2-4). However, neither Figure 1 of Rajan, nor ¶¶ 0040-0045 of the specification of Rajan, was included in the Rajan Provisional. A far less detailed and sophisticated version of Figure 1 was included in the Rajan Provisional, which figure omits many of the details included in Figure 1 of Rajan. Furthermore, the description provided in the Rajan Provisional is less extensive than that of Rajan, and omits the paragraphs cited by the Examiner.

Accordingly, for at least this reason, Appellants respectfully request reversal of all rejections of record.

3. Rajan Does Not Disclose "performing object extraction processing to generate multimedia object descriptions"

Independent claim 1 is directed to a system for generating a description record from multimedia information, comprising, *inter alia*:

> a computer processor, coupled to said at least one multimedia information input interface, receiving said multimedia information therefrom, processing said multimedia information by **performing object extraction processing to generate multimedia object descriptions** from said multimedia information, and processing said generated multimedia object descriptions by object hierarchy processing to generate multimedia object hierarchy descriptions indicative of an organization of said object descriptions, wherein at least one description record including said multimedia object descriptions and said multimedia object hierarchy descriptions is generated for content embedded within said multimedia information
>
> (Claim 1).

By way of background, the present invention relates to the MPEG-7 standard, which comprises techniques for describing and organizing multimedia information (in fact, the inventors of the present invention contributed to the development of that standard through participation in a standards-setting body) (*See* Specification, p. 2, lines 11-30). As described in the Background of the Invention (starting at p. 1 of the Specification), the prior art provides means for searching textual information, both on the internet and locally. However, at the time of the present invention, there was no means for searching multimedia content. An aim of MPEG-7 is to process multimedia such as video data to extract information about what is shown in the video and provide descriptions that may later aid in searching or cataloging the video.

"*Performing object extraction processing to generate multimedia object descriptions*," as recited in the independent claims of the present application (and, by virtue of dependency, as is included in all of the dependent claims), is an important procedure in accomplishing these and other objects of the invention. (*See*, e.g., Specification, p. 26; Figs. 7 and 8).

Rajan is directed to a method and apparatus for *composing* and *presenting* multimedia programs (which is the province of a different standard -- the MPEG-4 standard) at a multimedia terminal, including an architecture wherein the composition of a multimedia scene and its presentation are processed by two different entities – a "composition engine" and a "presentation engine." *See* Rajan, ¶ 0002. The MPEG-4 standard generally "allows a user to interact with video and audio objects within a scene," and allows a user to modify scenes by deleting, adding, or repositioning objects, or changing the characteristics of objects, such as size, color, and shape, for example. *See* Rajan, ¶ 0004. Accordingly, generally speaking, Rajan is a different system directed to a different problem, i.e., *composing* and *presenting* multimedia video, from that of the present invention, which is instead directed to techniques for describing multimedia information content, e.g., to enable intelligent searching of multimedia content via, e.g., the Internet. *See* Specification, p.1 , lines 1-4, p. 9, lines 23-29. Indeed, this distinction is inherent in the differences between the subject matter of the Rajan reference (e.g., MPEG-4 video composition and presentation) and the subject matter of the present invention (e.g., MPEG-7 video description), and would be immediately understood by one of ordinary skill in the art.

Rajan does not disclose or suggest at least the claimed "performing object extraction processing to generate multimedia object descriptions." Indeed, the lack of such disclosure in Rajan is not surprising, since although "*object extraction processing* to generate multimedia object descriptions" is a key step in the present invention (in order to extract

information from a multimedia signal, such as a picture or video, to describe the contents of the picture or video), it is entirely unnecessary for the purposes of MPEG-4 and Rajan (which are directed to multimedia *composition* and *presentation*, and *not extraction*).

The Examiner, on pp. 4-6 of the Final Office Action, maintains that ¶¶ 0042 – 0046 of Rajan disclose all elements of claim 1. Appellants respectfully disagree.

In particular, the Examiner alleges that ¶ 0042 of Rajan discloses the claimed object extraction (Final Office Action, p. 3). However, ¶ 0042 of Rajan states:

> According to the MPEG-4 Systems standard, the scene description information is coded into a binary format known as BIFS (Binary Format for Scene). This BIFS data is packetized and multiplexed at a transmission site, such as a cable and or satellite television headend, or a server in a computer network, before being sent over a communication channel to a terminal 100. The data may be sent to a single terminal or to a terminal population. Moreover, the data may be sent via an open-access network or via a subscriber network.

This portion of Rajan is directed to BIFS (Binary Format for Scene) coding, a technique for data transmission described in the MPEG-4 standard and which has no relation whatsoever to the *object extraction for generating multimedia descriptions* of the claimed invention. In particular, the Examiner refers to "scene description information" as allegedly meeting this claim limitation. It does not. The "scene description information" mentioned in Rajan is used in conjunction with BIFS to compose and transmit scene information for composition and presentation of a scene. This is entirely different from the claimed invention, which receives as an input multimedia information (which is already created) and, from that information, using, e.g., *object extraction processing*, extracts information about the multimedia information to generate *multimedia object descriptions* about that input multimedia information.

Furthermore, the claimed *object extraction processing to generate multimedia object descriptions* is not disclosed nor suggested anywhere else in Rajan. For at least this reason, Appellants respectfully submit that Rajan fails to disclose or suggest all elements of independent claims 1, 17 and 33 and, accordingly, cannot properly anticipate the claimed invention. Furthermore, because all dependent claims in this application depend ultimately from one of these independent claims, Appellants submit that Rajan likewise cannot anticipate the dependent claims for at least the foregoing reasons. Appellants respectfully submit that this alone is sufficient basis to reverse all rejections of record.

4. Rajan Does Not Disclose "processing said generated multimedia object descriptions by object hierarchy processing to generate multimedia object hierarchy descriptions"

In addition to the limitations described above, claim 1 also includes "processing said generated multimedia object descriptions by object hierarchy processing to generate multimedia object descriptions." As discussed above, because Rajan fails to disclose or suggest generating "multimedia object descriptions," Rajan cannot possibly disclose or suggest "*processing* said generated multimedia object descriptions. For at least this reason, this additional limitation of claim 1 is not disclosed or suggested by Rajan.

Furthermore, as discussed above, Rajan's priority document (the Rajan Provisional) fails to support the cited portion of Rajan which forms the basis for the Examiner's rejections in this respect. Specifically, the Examiner relies on ¶ 0043 of Rajan as allegedly disclosing "processing said generated multimedia object descriptions by object hierarchy processing to generate multimedia object hierarchy descriptions," presumably based on the following text of Rajan:

> The scene description information describes the logical structure of a scene, and indicates how objects are grouped together. **Specifically, an MPEG-4 scene follows a hierarchical structure**, which can be represented as a directed acyclic (tree) graph, where each node or a group of nodes, of the graph, represents a media object.
>
> Rajan, ¶ 0043.

This lone reference in Rajan to any alleged "hierarchy" is not supported in the Rajan priority document (i.e., the Rajan Provisional), which is the only document to pre-date the priority date of the present application. Rajan therefore cannot be said to disclose or suggest any type of hierarchy for purposes of prior art to the present application, let alone the claimed "processing said generated multimedia object descriptions by object hierarchy processing to generate multimedia object descriptions." For at least this independent reason, Appellants respectfully request reversal of all rejections of record.

Additionally, while ¶ 0043 generally discloses that an "MPEG-4 scene follows a hierarchical structure," it nowhere indicates that multimedia objection descriptions, which are generated by, e.g., performing object extraction, are processed by object hierarchy processing.

Furthermore, ¶ 0043 contains the *only* reference to any "hierarchical structure" in the entirety of Rajan. The "hierarchical structure" mentioned here is not described in detail, and the description is certainly is not enabling to one of ordinary skill in the art. To be prior art under §102, a reference must put the allegedly anticipating subject matter at issue into the possession of the public through an enabling disclosure. *See Chester v. Miller*, 906 F.2d 1574, 1576 n.2, 15 U.S.P.Q.2d 1333 (Fed. Cir. 1990). For at least this reason, the claimed "processing said generated multimedia object descriptions by object hierarchy processing to generate multimedia object hierarchy" is not disclosed for purposes of anticipation.

Furthermore, the claimed *object hierarchy processing to generate multimedia object hierarchy descriptions* and this lone instance of "hierarchy" in Rajan are completely different. The cited paragraph of Rajan, ¶ 0043, states that "an MPEG-4 scene follows a hierarchical structure." This indicates that the "tree structure" discussed in Rajan is for purposes of flow of a video scene in space and time. This is further apparent when considered in the context of the problem which Rajan is directed to, i.e., *composing* and *presenting* multimedia video *in space and time*. Rajan relates to scenes.

However, the claimed hierarchy, as further described and defined by the Applicants, e.g., at pp. 17-20 of the present application, relates to an object hierarchy *for description of particular video objects with varying levels of specificity* – for purposes of *content description*, and *not* hierarchy of a scene for composing or presenting the scene. The claimed object hierarchy processing can produce a "physical hierarchy" and a "logical hierarchy," which relate to the physical location of objects in an image, and a higher level hierarchy based on semantic descriptions of the objects in the image, respectively. (*See* Specification, p. 17; Fig. 4). The object hierarchy descriptions may include semantic information which is useful for searching a library of multimedia segments, such as "names of the picture, the names of persons in the picture, the location where the picture was taken, the event that is represented by the picture, the date of the picture, color features... ." (Specification, p. 20).

Accordingly, because Rajan fails to disclose or suggest at least these additional claimed features, Rajan fails to anticipate independent claims 1, 17 and 33. Additionally, because all dependent claims contain the foregoing limitations through dependency from the independent claims, Appellants respectfully submit that the rejections of record should be reversed as to all claims.

5. Rajan Does Not Disclose "feature extraction"

Claims 3, 7, 10, 15, 19, 23, 26 and 31 are not anticipated by Rajan by virtue of their dependency from claim 1, and for the reasons discussed above. Additionally, these claims include the further limitation of "feature extraction." (*See* Specification, p. 26). Regardless of the outcome with respect to the independent claims, claims 3, 7, 10, 15, 19, 23, 26 and 31 are independently patentable over Rajan for the additional reason that Rajan fails to disclose or suggest "feature extraction."

The Examiner asserts that the following ¶ 0045 of Rajan describes this claimed feature:

> The scene description information can also indicate attribute value selection. Individual media objects and scene description nodes expose a set of parameters to a composition layer through which part of their behavior can be controlled. Examples include the pitch of a sound, the color for a synthetic object, activation or deactivation of enhancement information for scaleable coding, and so forth.

Rajan, ¶ 0045.

Appellants cannot find any reference in the above-cited paragraph to the claimed "feature extraction." Appellants can only guess that the Examiner refers to, e.g., "the pitch of a sound, the color for a synthetic object" and the like as being "features," and that, as a result, this somehow equates to the *feature extraction* of the claimed invention. Appellants respectfully disagree. Again, as Rajan relates to *composing* and *presenting* multimedia, it has no need to "extract" information about that multimedia it has composed. The cited paragraph of Rajan in particular relates to *controlling* the behavior/composition of objects in a scene, and not extracting information from multimedia. Accordingly, for at least this additional reason, Appellants

respectfully submit that the rejections of claims 3, 7, 10, 15, 19, 23, 26 and 31, and the claims which depend from them, should be reversed.

Further regarding claims 3, 7, 19 and 23, on p. 10 of the Final Office Action, the Examiner refers to the following portion of Rajan which allegedly "reads on image segmentation and feature extraction":

> 4. The MPEG-4 communication standard allows a user to interact with video and audio objects within a scene, whether they are from conventional sources, such as moving video, or from synthetic (computer generated) sources. The user can modify scenes by deleting, adding or repositioning objects or changing the characteristics of the objects, such as size, color, and shape, for example.
>
> 6. The objects can exist independently, or be joined with other objects in a scene in a grouping known as a "composition." Visual objects in a scene are given a position in two- or three- dimensional space while audio objects can be placed in a sound space.
>
> 8. BIFS commands can add or delete objects from a scene, for example, or changed [sic] the visual or acoustic properties of objects. BIFS commands also define, update, and position the objects. For example, a visual property such as the color or size of an object can be changed, or the object can be animated.

None of these cited paragraphs of Rajan discloses or even remotely suggests *image segmentation* or *feature extraction* – which is entirely expected, again, since Rajan deals with the problems associated with MPEG-4 (intended for composing and presenting multimedia content) and is *not* those addressed by MPEG-7 (intended for *extraction* of information from multimedia content in order to categorize and search the multimedia content). As discussed above, for at least this additional reason, Appellants respectfully submit that the rejections in the Final Office Action should be reversed.

6. The Claims Recite "generation of multimedia object hierarchy"

Additionally, there are other deficiencies in the Examiner's "Response to Arguments," which begins at p. 4 of the Final Office Action. First, on page 8, the Examiner states the following:

> "Examiner is not persuaded. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., generation of multimedia object hierarchy) is not recited in the rejected claim(s)."
>
> Final Office Action, p. 8.

However, Appellants refer to text in, e.g., claim 1, which states: "processing said generated multimedia object descriptions by object hierarchy processing to generate multimedia object hierarchy descriptions."

In this respect, as discussed above, Rajan and MPEG-4 deal with "hierarchy" in the sense of *scene* descriptions, wherein objects are described in a hierarchical fashion to provide composition and presentation information for presenting multimedia content. The present invention, however, refers to object hierarchy *descriptions*, as described throughout the specification, including at, e.g., pp. 19-20. The Examiner has alleged that Appellants argued features not recited in the rejected claims. However, this feature is recited in several of the rejected claims.

7. The Cited MPEG-4 Reference Is Not Evidence Of The State Of The Art

Additionally, though it apparently did not form the basis for any rejections, the Examiner relies on a 1999 MPEG-4 publication as alleged evidence of the state of the art at the time the present application was filed. (*See* Final Office Action, p. 9). However, the present application claims priority to November 6, 1998. For at least this reason, the cited reference is

not a valid indicator of the state of the art at the time of the present invention. Additionally, as explained in detail above, the cited reference refers to MPEG-4 technology, which is distinct from and unrelated to the claimed invention.

B. Conclusion

For at least the reasons indicated above, Appellants respectfully submit that the invention recited in the claims of the present application, as discussed above, is not anticipated by the cited prior art. Reversal of the Examiner's rejections of the claims is therefore respectfully requested.

Respectfully submitted,

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VIII. CLAIMS APPENDIX

Claims 1-43 are pending in this application:

1. (Original) A system for generating a description record from multimedia information, comprising:

(a) at least one multimedia information input interface receiving said multimedia information;

(b) a computer processor, coupled to said at least one multimedia information input interface, receiving said multimedia information therefrom, processing said multimedia information by performing object extraction processing to generate multimedia object descriptions from said multimedia information, and processing said generated multimedia object descriptions by object hierarchy processing to generate multimedia object hierarchy descriptions indicative of an organization of said object descriptions, wherein at least one description record including said multimedia object descriptions and said multimedia object hierarchy descriptions is generated for content embedded within said multimedia information; and

(c) a data storage system, operatively coupled to said processor, for storing said at least one description record.

2. (Original) The system of claim 1, wherein said multimedia information comprises image information, said multimedia object descriptions comprise image object descriptions, and said multimedia object hierarchy descriptions comprise image object hierarchy descriptions.

3. (Original) The system of claim 2, wherein said object extraction processing comprises:

(a) image segmentation processing to segment each image in said image information into regions within said image; and

(b) feature extraction processing to generate one or more feature descriptions for one or more of said regions;

whereby said generated object descriptions comprise said one or more feature descriptions for one or more of said regions.

4. (Original) The system of claim 3, wherein said one or more feature descriptions are selected from the group consisting of text annotations, color, texture, shape, size, and position.

5. (Original) The system of claim 2, wherein said object hierarchy processing comprises physical object hierarchy organization to generate physical object hierarchy descriptions of said image object descriptions that are based on spatial characteristics of said objects, such that said image object hierarchy descriptions comprise physical descriptions.

6. (Original) The system of claim 5, wherein said object hierarchy processing further comprises logical object hierarchy organization to generate logical object hierarchy descriptions of said image object descriptions that are based on semantic characteristics of said objects, such that said image object hierarchy descriptions comprise both physical and logical descriptions.

7. (Original) The system of claim 6, wherein said object extraction processing comprises:

(a) image segmentation processing to segment each image in said image information into regions within said image; and

(b) feature extraction processing to generate object descriptions for one or more of said region;

and wherein said physical hierarchy organization and said logical hierarchy organization. generate hierarchy descriptions of said object descriptions for said one or more of said regions.

8. (Original) The system of claim 7, further comprising an encoder receiving said image object hierarchy descriptions and said image object

descriptions, and encoding said image object hierarchy descriptions and said image object descriptions into encoded description information, wherein said data storage system is operative to store said encoded description information as said at least one description record.

9. (Original) The system of claim 1, wherein said multimedia information comprises video information, said multimedia object descriptions comprise video object descriptions including both event descriptions and object descriptions, and said multimedia hierarchy descriptions comprise video object hierarchy descriptions including both event hierarchy descriptions and object hierarchy descriptions.

10. (Original) The system of claim 9, wherein said object extraction processing comprises:

(a) temporal video segmentation processing to temporally segment said video information into one or more video events or groups of video events and generate event descriptions for said video events,

(b) video object extraction processing to segment said one or more video events or groups of video events into one or more regions, and to generate object descriptions for said regions; and

(c) feature extraction processing to generate one or more event feature descriptions for said one or more video events or groups of video events, and one or more object feature descriptions for said one or more regions;

wherein said generated video object descriptions include said event feature descriptions and said object descriptions.

11. (Original) The system of claim 10, wherein said one or more event feature descriptions are selected from the group consisting of text annotations, shot transition, camera motion, time and key frame, and wherein said one or more object feature descriptions are selected from the group consisting of color, texture, shape, size, position, motion, and time.

12. (Original) The system of claim 9, wherein said object hierarchy processing comprises physical event hierarchy organization to generate

physical event hierarchy descriptions of said video object descriptions that are based on temporal characteristics of said video objects, such that said video hierarchy descriptions comprise temporal descriptions.

13. (Original) The system of claim 12, wherein said object hierarchy processing further comprises logical event hierarchy organization to generate logical event hierarchy descriptions of said video object descriptions that are based on semantic characteristics of said video objects, such that said hierarchy descriptions comprise both temporal and logical descriptions.

14. (Original) The system of claim 13, wherein said object hierarchy processing further comprises physical and logical object hierarchy extraction processing, receiving said temporal and logical descriptions and generating object hierarchy descriptions for video objects embedded within said video information, such that said video hierarchy descriptions comprise temporal and logical event and object descriptions.

15. (Original) The system of claim 14, wherein said object extraction processing comprises:

(a) temporal video segmentation processing to temporally segment said video information into one or more video events or groups of video events and generate event descriptions for said video events,

(b) video object extraction processing to segment said one or more video events or groups of video events into one or more regions, and to generate object descriptions for said regions; and

(c) feature extraction processing to generate one or more event feature descriptions for said one or more video events or groups of video events, and one or more object feature descriptions for said one or more regions;

wherein said generated video object descriptions include said event feature descriptions and said object descriptions, and wherein said physical event hierarchy organization and said logical event hierarchy organization generate hierarchy descriptions from said event feature descriptions, and wherein said physical object hierarchy organization and said logical object

hierarchy organization generate hierarchy descriptions from said object feature descriptions

16. (Original) The system of claim 15, further comprising an encoder receiving said video object hierarchy descriptions and said video object descriptions, and encoding said said video object hierarchy descriptions and said video object descriptions into encoded description information, wherein said data storage system is operative to store said encoded description information as said at least one description record.

17. (Original) A method for generating a description record from multimedia information, comprising the steps of:

(a) receiving said multimedia information;

(b) processing said multimedia information by performing object extraction processing to generate multimedia object descriptions from said multimedia information;

(c) processing said generated multimedia object descriptions by object hierarchy processing to generate multimedia object hierarchy descriptions indicative of an organization of said object descriptions, wherein at least one description record including said multimedia object descriptions and said multimedia object hierarchy descriptions is generated for content embedded within said multimedia information; and

(d) storing said at least one description record.

18. (Original) The method of claim 17, wherein said multimedia information comprises image information, said multimedia object descriptions comprise image object descriptions, and said multimedia object hierarchy descriptions comprise image object hierarchy descriptions.

19. (Previously amended) The method of claim 18, wherein said object extraction processing step comprises the sub-steps of:

(a) image segmentation processing to segment each image in said image information into regions within said image; and

(b) feature extraction processing to generate one or more feature descriptions for one or more of said regions;

whereby said generated image object descriptions comprise said one or more feature descriptions for one or more of said regions.

20. (Original) The method of claim 19, wherein said one or more feature descriptions are selected from the group consisting of text annotations, color, texture, shape, size, and position.

21. (Original) The method of claim 18, wherein said step of object hierarchy processing includes the sub-step of physical object hierarchy organization to generate physical object hierarchy descriptions of said image object descriptions that are based on spatial characteristics of said objects, such that said image hierarchy descriptions comprise physical descriptions.

22. (Original) The method of claim 21, said step of object hierarchy processing further includes the sub-step of logical object hierarchy organization to generate logical object hierarchy descriptions of said image object descriptions that are based on semantic characteristics of said objects, such that said image object hierarchy descriptions comprise both physical and logical descriptions.

23. (Original) The method of claim 22, wherein said step of object extraction processing further includes the sub-steps of:

(a) image segmentation processing to segment each image in said image information into regions within said image; and

(b) feature extraction processing to generate object descriptions for one or more of said region;

and wherein said physical object hierarchy organization sub-step and said logical object hierarchy organization sub-step generate hierarchy descriptions of said object descriptions for said one or more of said regions.

24. (Previously presented) The method of claim 18, further comprising the step of encoding said image object descriptions and said image object hierarchy descriptions into encoded description information prior to said data storage step.

25. (Original) The method of claim 17, wherein said multimedia information comprises video information, said multimedia object descriptions comprise video object descriptions including both event descriptions and object descriptions, and said multimedia hierarchy descriptions comprise video object hierarchy descriptions including both event hierarchy descriptions and object hierarchy descriptions.

26. (Original) The method of claim 25, wherein said step of object extraction processing comprises the sub-steps of:

(a) temporal video segmentation processing to temporally segment said video information into one or more video events or groups of video events and generate event descriptions for said video events,

(b) video object extraction processing to segment said one or more video events or groups of video events into one or more regions, and to generate object descriptions for said regions; and

(c) feature extraction processing to generate one or more event feature descriptions for said one or more video events or groups of video events, and one or more object feature descriptions for said one or more regions;

wherein said generated video object descriptions include said event feature descriptions and said object descriptions.

27. (Original) The method of claim 26, wherein said one or more event feature descriptions are selected from the group consisting of text annotations, shot transition, camera motion, time and key frame, and wherein said one or more object feature descriptions are selected from the group consisting of color, texture, shape, size, position, motion, and time.

28. (Original) The method of claim 25, wherein said step of object hierarchy processing includes the sub-step of physical event hierarchy organization to generate physical event hierarchy descriptions of said video object descriptions that are based on temporal characteristics of said video objects, such that said video hierarchy descriptions comprise temporal descriptions.

29. (Original) The method of claim 28, wherein said step of object hierarchy processing further includes the sub-step of logical event hierarchy organization to generate logical event hierarchy descriptions of said video object descriptions that are based on semantic characteristics of said video objects, such that said hierarchy descriptions comprise both temporal and logical descriptions.

30. (Original) The method of claim 29, wherein said step of object hierarchy processing further comprises the sub-step physical and logical object hierarchy extraction processing, receiving said temporal and logical descriptions and generating object hierarchy descriptions for video objects embedded within said video information, such that said video hierarchy descriptions comprise temporal and logical event and object descriptions..

31. (Original) The method of claim 30, wherein said step of object extraction processing comprises the sub-steps of:

(a) temporal video segmentation processing to temporally segment said video information into one or more video events or groups of video events and generate event descriptions for said video events,

(b) video object extraction processing to segment said one or more video events or groups of video events into one or more regions, and to generate object descriptions for said regions; and

(c) feature extraction processing to generate one or more event feature descriptions for said one or more video events or groups of video events, and one or more object feature descriptions for said one or more regions;

wherein said generated video object descriptions include said event feature descriptions and said object descriptions, and wherein said physical event

hierarchy organization and said logical event hierarchy organization generate hierarchy descriptions from said event feature descriptions, and wherein said physical object hierarchy organization and said logical object hierarchy organization generate hierarchy descriptions from said object feature descriptions.

32. (Previously presented) The method of claim 31, further comprising the step of encoding said video object descriptions and said video object hierarchy descriptions into encoded description information prior to said data storage step.

33. (Previously presented) A computer readable media containing digital information with at least one multimedia description record describing multimedia content for corresponding multimedia information, the description record comprising:

(a) one or more multimedia object descriptions, generated by performing object extraction processing, said object descriptions describing corresponding multimedia objects;

(b) one or more features characterizing each of said multimedia object descriptions; and

(c) one or more multimedia object hierarchy descriptions indicative of an organization of said object descriptions, if any, relating at least a portion of said one or more multimedia objects in accordance with one or more characteristics.

34. (Original) The computer readable media of claim 33, wherein said multimedia information comprises image information, said multimedia objects comprise image objects, said multimedia object descriptions comprise image object descriptions, and said multimedia object hierarchy descriptions comprise image object hierarchy descriptions.

35. (Original) The computer readable media of claim 34, wherein said one or more features are selected from the group consisting of text annotations, color, texture, shape, size, and position.

36. (Original) The computer readable media of claim 34, wherein said image object hierarchy descriptions comprise physical object hierarchy descriptions of said image object descriptions based on spatial characteristics of said image objects.

37. (Original) The computer readable media of claim 36, wherein said image object hierarchy descriptions further comprises logical object hierarchy descriptions of said image object descriptions based on semantic characteristics of said image objects.

38. (Original) The computer readable media of claim 33, wherein said multimedia information comprises video information, said multimedia objects comprise events and video objects, said multimedia object descriptions comprise video object descriptions including both event descriptions and object descriptions, said features comprise video event features and video object features, and said multimedia hierarchy descriptions comprise video object hierarchy descriptions including both event hierarchy descriptions and object hierarchy descriptions .

39. (Original) The computer readable media of claim 38, wherein said one or more event feature descriptions are selected from the group consisting of text annotations, shot transition, camera motion, time and key frame, and wherein said one or more object feature descriptions are selected from the group consisting of color, texture, shape, size, position, motion, and time..

40. (Original) The computer readable media of claim 38, wherein said event hierarchy descriptions comprise one or more physical hierarchy descriptions of said events based on temporal characteristics.

41. (Original) The computer readable media of claim 40, wherein said event hierarchy descriptions further comprise one or more logical hierarchy descriptions of said events based on semantic characteristics.

42. (Original) The computer readable media of claim 38, wherein said object hierarchy descriptions comprise one or more physical hierarchy descriptions of said objects based on temporal characteristics.

43. (Original) The computer readable media of claim 39, wherein said object hierarchy descriptions further comprise one or more logical hierarchy descriptions. of said objects based on semantic characteristics.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.